INCH-POUND

MIL-R-5757/10L
3 September 2004
SUPERSEDING
MIL-R-5757/10K
31 October 1984

MILITARY SPECIFICATION SHEET

RELAYS, ELECTROMAGNETIC, HERMETICALLY SEALED, DPDT, LOW LEVEL TO 2 AMPERES

INACTIVE FOR NEW DESIGN
AFTER 15 OCTOBER 1998

This specification sheet is approved for use by all Departments and Agencies of the Department of Defense.

The requirements for acquiring the product described herein shall consist of this specification sheet and MIL-R-5757.

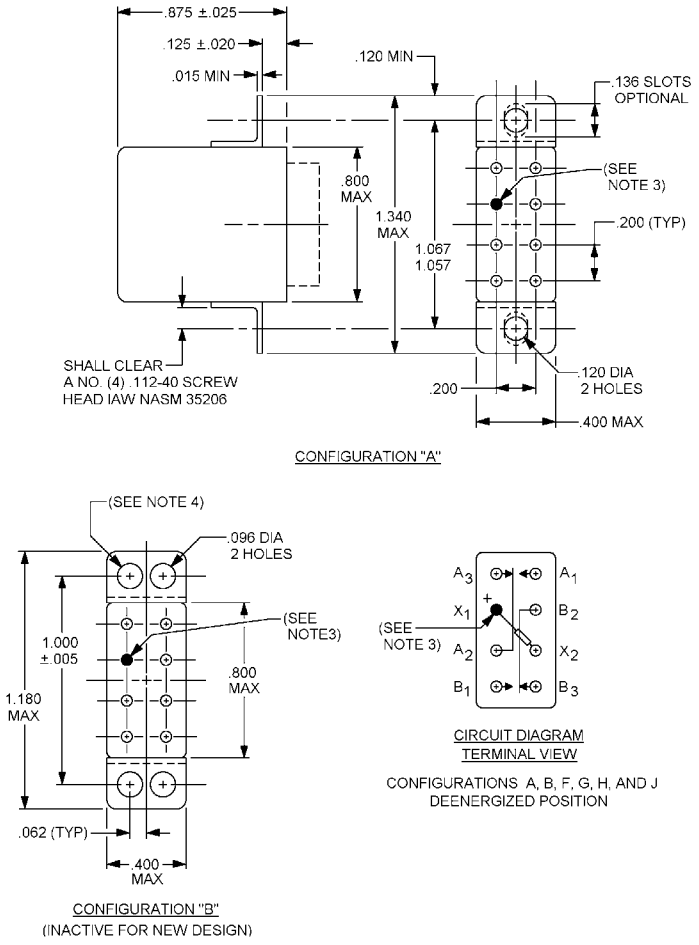
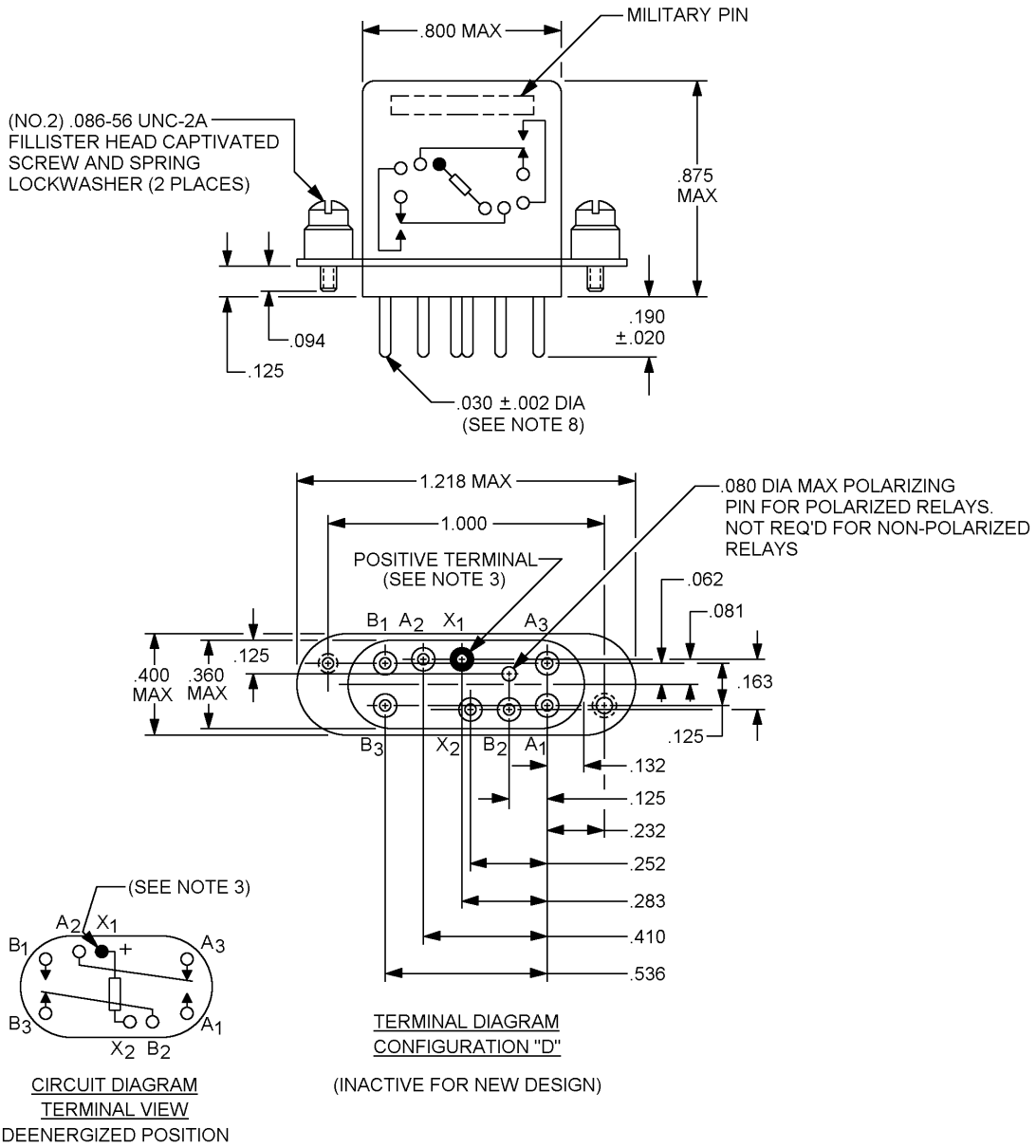


FIGURE 1. Dimensions and configuration.



CIRCUIT DIAGRAM
TERMINAL VIEW
DEENERGIZED POSITION

TERMINAL DIAGRAM
CONFIGURATION "D"

(INACTIVE FOR NEW DESIGN)

FIGURE 1. Dimensions and configuration - Continued.

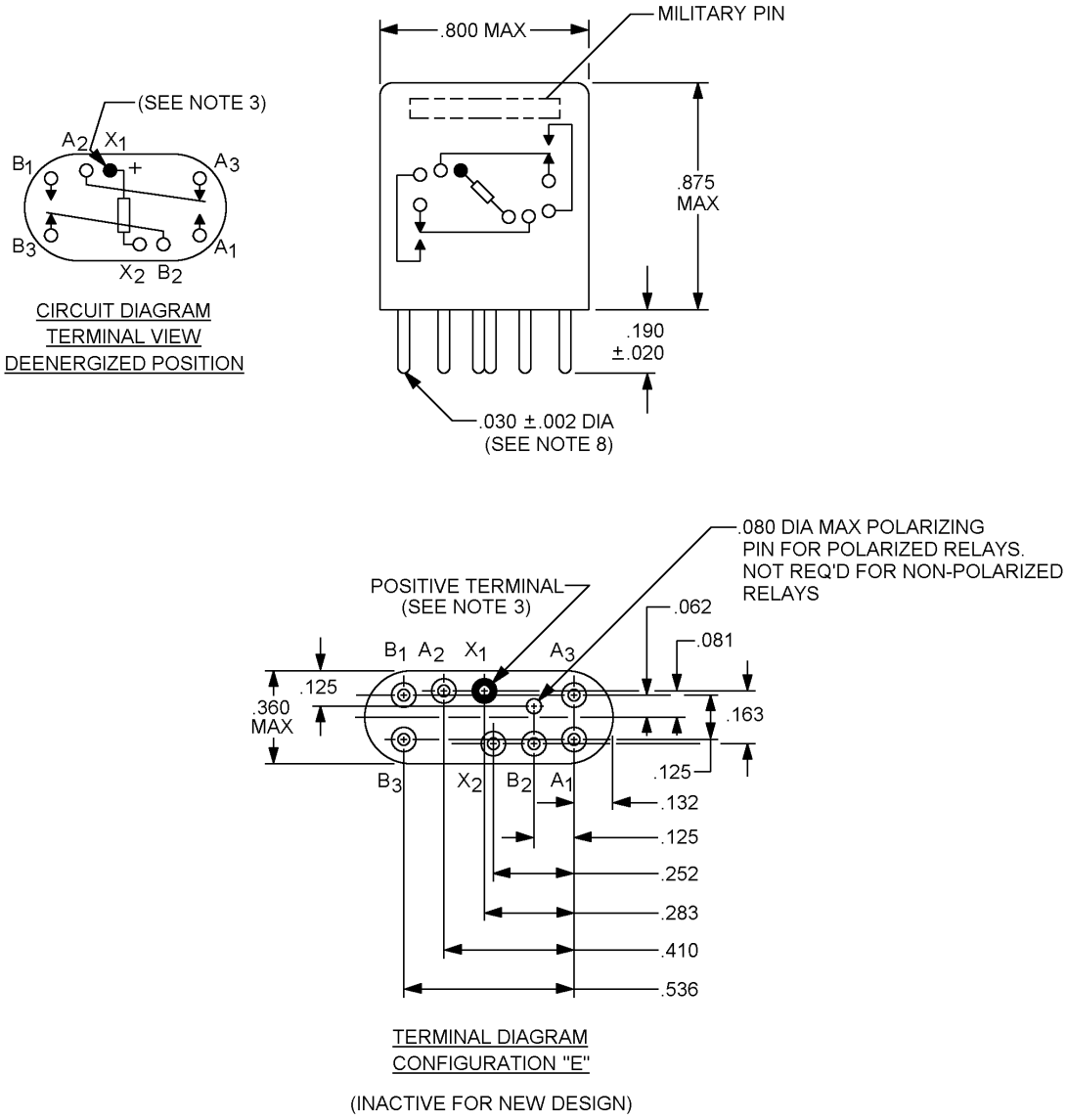


FIGURE 1. Dimensions and configuration - Continued.

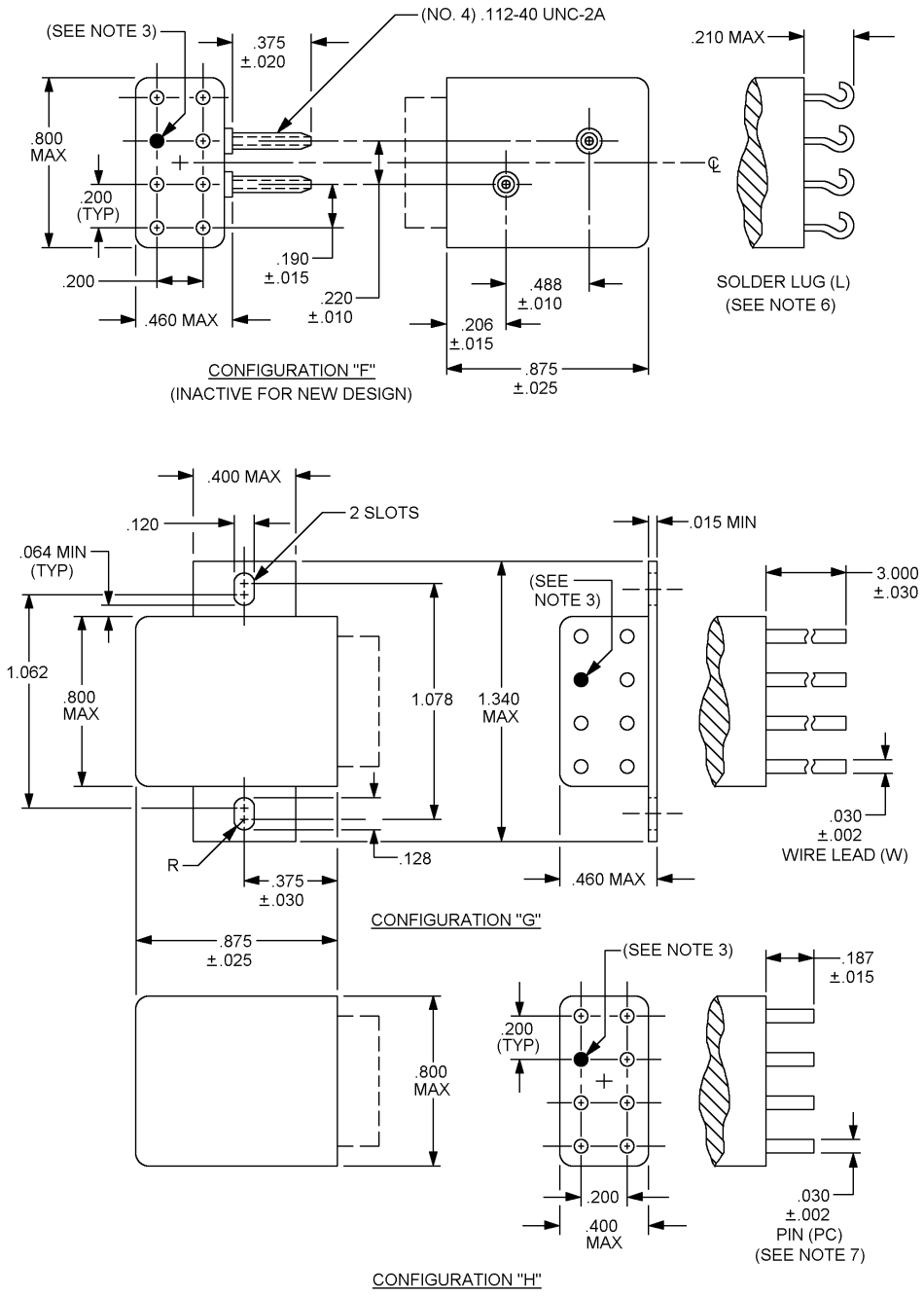
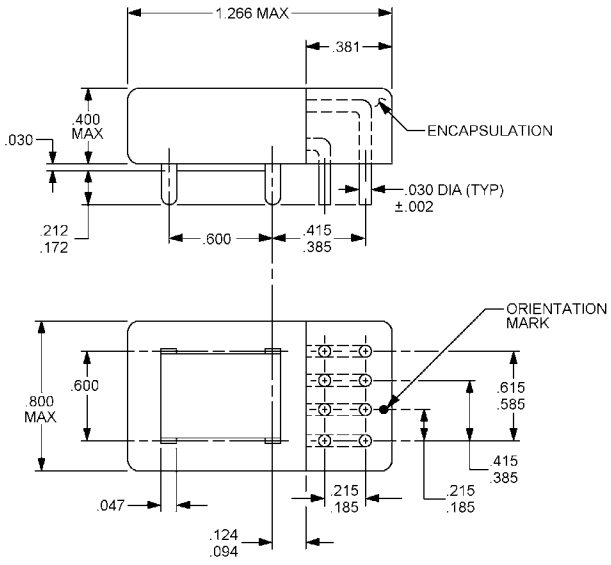


FIGURE 1. Dimensions and configuration - Continued.



CONFIGURATION "J"

Inches	mm	Inches	mm	Inches	mm	Inches	mm	Inches	mm
.002	0.05	.094	2.39	.190	4.83	.381	9.68	.800	20.32
.005	0.13	.096	2.44	.200	5.08	.385	9.78	.875	22.22
.010	0.25	.120	3.05	.206	5.23	.400	10.16	1.000	25.40
.015	0.38	.124	3.15	.210	5.33	.410	10.41	1.057	26.85
.020	0.51	.125	3.18	.212	5.38	.415	10.54	1.062	26.97
.025	0.64	.128	3.25	.215	5.46	.460	11.68	1.067	27.10
.030	0.76	.132	3.35	.220	5.59	.488	12.40	1.078	27.38
.047	1.19	.136	3.45	.232	5.89	.536	13.61	1.180	29.97
.062	1.57	.163	4.14	.252	6.40	.585	14.86	1.218	30.94
.064	1.63	.172	4.37	.283	7.19	.600	15.24	1.266	32.16
.080	2.03	.185	4.70	.359	9.12	.615	15.62	1.340	34.04
.081	2.06	.187	4.75	.360	9.14	.797	20.24	3.000	76.20
				.375	9.52				

NOTES:

1. Dimensions are in inches. Unless otherwise specified, tolerance is ± .010 (0.25 mm).
2. Metric equivalents are given for general information only.
3. Terminal X1 shall be identified by a bead of contrasting color. For tab mount orientation mark shall be used. Terminal identification for reference only.
4. Two additional mounting holes positioned as shown are optional.
5. Symmetry of terminals and mounting means with respect to the relay shall be maintained (centerline).
6. Shape of lug (solder) terminals optional.
7. Relays with pin terminals shall not be used for plug-in socket applications.
8. All active electrical terminals shall be gold plated 0.00005 (50 microinches) minimum. One system for gold plating that may be used is ASTM B488, type 3, class 1.25 with a nickel underplate of 50 to 150 microinches thick. Gold plating of index pins is optional. The gold plating system shall enable the product to meet the performance requirements of this specification and shall be approved by the qualifying activity.

FIGURE 1. Dimensions and configurations - Continued.

REQUIREMENTS:

Contact data:

	High level characteristics 1/	Low level characteristics 2/
Configuration	DPDT	DPDT
Arrangement	2 form C	2 form C
Load ratings (relay case grounded):		
Resistive	See table I	10 to 50 microamperes at 10 to 50 mV, dc or peak ac
Inductive	See table I	Not applicable
Lamp	See table I	Not applicable
Intermediate current:	Applicable	Not applicable
Contact resistance or voltage drop:		
Rated life:		
Before	.05 ohm maximum	.05 ohm maximum
During	10 percent of open circuit voltage	50 ohms maximum
After	.10 ohm maximum	.15 ohm maximum
Intermediate current:		
Before	.05 ohm maximum	Not applicable
During	3 ohms maximum	Not applicable
After	3 ohms maximum	Not applicable
Contact bounce	1 millisecond (ms) maximum	2 ms maximum
Overload test:		
Resistive	2 times rated current	Not applicable
Inductive	2 times rated current	Not applicable

TABLE I. High-level load ratings.

Type of load	Amperes		
	28 V dc	115 V 400 Hz 1/	115 V 60 Hz
Resistive	2.0	0.3	0.3
Inductive	1.0 2/	0.3	0.3
Lamp 1/	0.1	0.1	0.1

1/ Life test not required.
2/ At an inductive load of 200 millihenries minimum.

1/ High-level relays are not designed for use at low-level loads.
2/ Relays intended for low-level applications shall not be tested at high level or with lamps.

Coil data: See table II.

Duty rating: Continuous.

Operate time (over temperature range): 6 milliseconds maximum.

Release time (over temperature range): 6 milliseconds maximum.

TABLE II. Dash numbers and applicable characteristics.

Dash number	Config-uration	Vibra-tion (g's) 5/	Coil voltage 1/ (V dc)		Over temperature range				Terminals
			(Max)	(Rated)	Pickup voltage (V dc) Max	Hold voltage (V dc)	Dropout voltage (V dc)	Coil resistance at 25°C (Ohms)	
Low level relays									
015	F	20	32	26.5	18	14	1.5	540 min to 770 max	L
016	F	20	32	26.5	18	14	1.5	540 min to 770 max	W
022	B	20	32	26.5	18	14	1.5	540 min to 770 max	PC
064	D	20	32	26.5	18	14	1.5	495 min to 770 max	Plug-in
065	E	20	32	26.5	18	14	1.5	495 min to 770 max	Plug-in
High level relays									
035	G	20	32	26.5	18	14	1.5	540 min to 770 max	L
036	G	20	32	26.5	18	14	1.5	540 min to 770 max	W
037	F	20	32	26.5	18	14	1.5	540 min to 770 max	L
038	F	20	32	26.5	18	14	1.5	540 min to 770 max	W
039	A	20	32	26.5	18	14	1.5	540 min to 770 max	L
040	A	20	32	26.5	18	14	1.5	540 min to 770 max	PC
043	B	20	32	26.5	18	14	1.5	540 min to 770 max	L
044	B	20	32	26.5	18	14	1.5	540 min to 770 max	PC
052	H	15	32	26.5	18	14	1.5	540 min to 770 max	L
053	H	15	32	26.5	18	14	1.5	540 min to 770 max	W
054	H	15	32	26.5	18	14	1.5	540 min to 770 max	PC
056	J	15	32	26.5	18	14	1.5	675 ±10%	PC
059	H	15	7.3	6.0	4.2	3.0	.14	44 ±10%	PC
060	H	15	14.7	12.0	8.9	6.0	.32	194 +10%, -15%	PC
066	C	20	30	---	2/	3/	4/	1,000 ±5%	Plug-in
067	A	20	14.7	12.0	12.0	6.0	.32	194 ±10%	Plug-in

1/ CAUTION: The use of any coil voltage less than the rated coil voltage will compromise the operation of the relay.

2/ Pickup current: 6.0 mA ± .5 mA dc.

3/ Hold current: 5.8 mA dc.

4/ Dropout current: 3.45 mA dc.

5/ Frequency range 10 to 2,000 Hz.

ELECTRICAL DATA:

Run-in: Applicable.

Insulation resistance: 1,000 megohms minimum except the resistance between coil and case at high temperature shall be 500 megohms or greater.

Dielectric withstanding voltage:

	Sea level V rms (60 Hz)	Altitude V rms (60 Hz)
Between case, frame or enclosure, and all contacts both in the energized and deenergized positions: ----------	1,000	
Between case, frame or enclosure and coil: ----------	500	350
Between all contacts and coil: ----------	1,000	All terminals to case
Between open contacts in the energized and deenergized positions: ----------	500	
Between contact poles: ----------	1,000	

ENVIRONMENTAL DATA:

Temperature range: -65°C to +125°C.

Vibration: See table II.

Acceleration: Applicable.

Shock: 100 g's.

Resistance to soldering heat: Applicable to pin type (printed circuit) terminals.

Internal moisture: Applicable.

PHYSICAL:

Enclosure design: Hermetically sealed.

Terminal strength:

Solder lug: 3 pound-pull ±0.3.

Pin type: 2 pound-pull ±0.2.

Terminal twist test: Applicable to wire leads.

Sealed by welding: Applicable, except configurations D and E may be solder sealed.

Dimensions and configuration: See figure 1.

Termination: See table II.

Weight: .050 pound (22.68 grams).

Magnetic interference: Applicable.

LIFE TEST REQUIREMENTS:

High level: 100,000 operations per relay.

Two relays per contact rating shall be tested with rated loads on all contacts, except minimum current.

For qualification inspection, the resistive and inductive 28 V dc loads and the resistive, inductive, and lamp 115 V, 60 Hz loads shall be used when performing the high-level life test.

Low level: 100,000 operations per relay.

Intermediate current: 50,000 operations.

VERIFICATION:

Group A.

Group A1: Run-in (high level) test load 100 mA at 28 V dc utilizing 10 percent of line drop; (low level) test load 10 mA maximum at 30 mV dc maximum.

QUALIFICATION: See tables III and IV.

TABLE III. Qualification inspection and sample size.

Single submission	Group submission	
High level: with minimum current 22 units plus 1 open unit.	M5757/10-039	20 units plus 1 open unit. Qualification inspection as applicable.
Qualification inspection as applicable.	M5757/10-036 M5757/10-056	2 units each part number. Shock, vibration, terminal strength, and qualification inspection, Q1.
Low level: 12 units plus 1 open unit. Qualification inspection as applicable.	M5757/10-022	2 units. Qualification inspection, Q1 plus life and seal.

TABLE IV. Qualification inspection and sample size for "S" headers (configurations D and E).

Single submission	Group submission	
High level: with minimum current 20 units plus 1 open unit. Qualification inspection as applicable.	M5757/10-066	20 units plus 1 open unit. Qualification inspection as applicable.
Low level: 12 units plus 1 open unit. Qualification inspection as applicable. 1/	M5757/10-064 M5757/10-065	12 units plus 1 open unit. Qualification inspection as applicable. 1/ 2 units, Q1.

1/ Tests as specified in the qualification inspection table of MIL-R-5757 (Q6 and visual and mechanical inspection not applicable).

Part or Identifying Number (PIN): M5757/10- (applicable dash numbers from table II).

SUPERSESSION DATA: See table V.

TABLE V. Supersession data. 1/

Superseded dash number M5757/10-	Superseding part number
001, 007, 013	M39016/6-107 or -207 2/
002, 008, 014	M39016/6-108 or -208 2/
003, 009	M5757/10-015
004, 010	M5757/10-016
005, 011, 017	M39016/6-104 or -204 2/
006, 012, 018	M39016/6-105 or -205 2/
019, 021	M39016/6-128 or -228 2/
020	M5757/10-022
023, 029	M5757/10-035
024, 030	M5757/10-036
025, 031	M5757/10-037
026, 032	M5757/10-038
027, 033	M5757/10-039
028, 034	M5757/10-040
151, 051, 141, 041	M5757/10-043
042	M5757/10-044
061	M39016/6-123 or -233 2/
062	M39016/6-109 or -209 2/
063	M5757/10-065
CAGE 80063 part numbers:	
SM-C-344272	M5757/10-065
SM-C-414133	M5757/10-064
SM-C-413824	M5757/10-065
SM-C-413823	M5757/10-066

1/ Dash numbers 045 through 050, 055, and 058 canceled without replacement

2/ For Government logistics support the -100 series shall be used; for original equipment manufacturers, the -200 series may be used.

Referenced documents. In addition to MIL-R-5757, this document references the following:

ASTM B488 NASM 35206

Changes from previous issue. The margins of this specification are marked with vertical lines to indicate where changes from the previous issue were made. This was done as a convenience only and the Government assumes no liability whatsoever for any inaccuracies in these notations. Bidders and contractors are cautioned to evaluate the requirements of this document based on the entire content irrespective of the marginal notations and relationship to the last previous issue.

Custodians:
Army - CR
Navy - EC
Air Force - 11
DLA - CC

Preparing activity:
DLA - CC

(Project 5945-1241)

Review activities:
Army - AT, AV, CR4, MI
Navy - AS, MC, OS
Air Force - 19, 99
NSA - NS

NOTE: The activities listed above were interested in this document as of the date of this document. Since organizations and responsibilities can change, you should verify the currency of the information above using the ASSIST Online database at http://www.dodssp.daps.mil/.